

Study of Medicinal Plants on Various Land Cover In Forest Area with Special Purpose of Lambung Mangkurat University South Kalimantan

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Research Paper

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Study of Medicinal Plants on Various Land Cover In Forest Area with Special Purpose of Lambung Mangkurat University South KalimantanReza Irawan Santosa^{1*}, Emmy Sri Mahreda², Abdi Fithria³, Emmy Lilimantik⁴¹ Postgraduate of PSDAL of Lambung Mangkurat University, South Kalimantan

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ABSTRACT: Special purpose forest area (KHDTK) is an educational forest area managed by Lambung Mangkurat University based on ministerial decree Number. 144 / KPTS-II / 2003. The purpose of this study is to get the information about the types of nutritious medicinal vegetation in Special purpose forest area (KHDTK) on various land cover. The plot method that had been used in this study is stratified sampling method with 2x2 plot for seedling level, 5x5 for sapling level, 10x10 for pole level and 20x20 for tree level. And, 38 types of nutritious medicinal vegetation has been found in this study. The most dominant medicinal vegetation on alang-alang land cover is Karamunting (*Ochthocharis bornensis*), and Alang-Alang (*Imperata cylindrica*). The dominant medicinal vegetation in primary forest land cover is Akar kuning (*Arcangelisia flava*), Pasak Bumi (*Eurycyoma longifolia*) etc. The dominant medicinal vegetation on secondary forest land cover is Kayu Sapat (*Macaranga triloba*), Karinyu (*Chromolaena odorata*), etc. The dominant medicinal vegetation on opened land cover is kantung semar (*Nepenthes*), Teki Grass (*Cyperus rotundus*), etc. While the dominant medicinal vegetation in shrubs land cover is Makassar fruit (*Brucea javanica*) and Bandotan (*Angeratum conyzoides*).

Keywords: Medicinal plant, KHDTK, Land Cover, Herbal Medicines

INTRODUCTION

Specially Designated Forest Area (KHDTK) is an educational forest area that was managed by Lambung Mangkurat University based on Kepmenhut (the decision of the minister of forestry) number. 144 / KPTS-II / 2003. The wide of this area is about 1,617 Ha. The region is divided into 2 parts, Waringin mountain and Babaris mountain. The general vegetation in KHDTK Babaris mountain and KHDTK Waringin mountain still have typical tropical rainforest traits, but in certain parts, the forest has been turned into secondary forest because of frequent fires and human activity. The area, mostly consists of *Imperata cylindrica* (from a flat area to the ridge). While the area was found started on the ridge up to the top.

The alang alang areas covered with plants such as: Alaban (*Vitex pubescens*), Karamunting (*Ochthocharis bornensis*), Kamalaka (*Phyllanthus emblica*), Mampat (*Cyatoclydon resosum*) and others. While in the watershed area, the condition of vegetation is better, because the water is enough for the plants. There are family of Myrtaceae (jambu - jambuan), Dipterocarpaceae and Apocynaceae. In the area of the back mountain straight to the peak, we can find encountered species of mountain pine (*Casuarina junghuniana*), kayu kacang (*Strombosia javanica*), madang pirawas (*Litsea odorifera*), tengkuk ayam (*Nephelium Sp*), margatahan (*Palaquim desyphllum*), kikir wood (*Casaria grewifolia*) etc.

Those vegetation can be developed further and better. One of the vegetation, is drug vegetation. Drug vegetation is something that is related to the culture of Indonesian society for years. Because of the improvement of knowledge of the disease, the knowledge of the drug is also doing the same thing, especially drugs that derived from natural or herbal ingredients. In the area of KHDTK Waringin Mountain and Babaris Mountain, there are so many vegetation that have medicinal properties. Some of them are commonly used by people that live around Waringin Mountain and Babaris Mountain. There are Alaban (*Vitex pubescens*), Kapur Naga (*Callophyllum inophyllum*), Margatahan (*Palaquim desyphllum*), Mahang (*Macaranga hypoleuca*), Madang puspa (*Schima wallichii*), and others.

In Kalimantan, There are still many species of medicinal vegetation that has not been identified. The problem is when there are a lot of species of the drug vegetation, but the utilization of vegetation is still lacking or not optimal. The utilization has not been optimal due to the lack of information which obtained by the community and related parties about the use of medicinal vegetation. KHDTK has various land cover and each land cover has various types of vegetation. Because of the big numbers of untreated medicinal vegetation and the potential of medicinal vegetation, then it should be a good natural resource to be developed by KHDTK parties, and it is really necessary to conduct more in-depth research on the existing medicinal vegetation in the KHDTK area. By those research, then, we will be able to help

the KHDTK to develop the potential of natural resources that exist in the area, especially the nutritious vegetation of the medicine. The results of this study also can be used for the people around the area and the general public.

MATERIALS AND METHODS

Location and Time of The Research

The study was conducted in January 2018 - February 2018 at the Special Purpose Forest (KHDTK) located in Banjar district, South Kalimantan Province. Geographically, KHDTK Babaris Mountain is located between 303010.47 South Latitude - 3032,558,05 South Latitude and 11405454,11 East Longitude - 11405738,62 East Longitude. While KHDTK Waringin Mountain is located between 302833.35 South Latitude - 3⁰29'1,92" South Latitude dan 114⁰56'15,72" East Longitude - 114⁰57'3,1" East Longitude.

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Tools and materials

The tool that had been used in this research are meter, rope, camera, machete and GPS (Global Positioning System). The material that had been used in this research is tally sheet and research map.

Data retrieval

This research used vegetation analysis method by using measuring plot. Determination of the sample in this research used Stratified sampling. It means that, the samples were taken based on the considerations of area on each land cover. There are 83 plots in this research, with the size 2x2 meter plot for seedling level, 5x5 meter for sapling and bottom vegetation, 10x10 for pole level and 20x20 for tree level.

Data analysis

The making of land cover used ArcGIS software by using the tools that was available in the software. As for the process of Identification of the type, properties and parts that had been used are done by using the services of batra based on studies of printed and online journals library related to medicinal vegetation.

RESULTS AND DISCUSSION

Drug Vegetations Based on Land Cover

Table 1. Medicinal vegetation on alang-alang land cover

Number	Vegetation	Scientific Name	Famili
1	Alaban	<i>Vitex pubescens</i>	Lamiaceae
2	Alang - Alang	<i>Imperata cylindrica</i>	Poaceae
3	Karamunting	<i>Ochthocharis bornensis</i>	Melastomataceae
4	Karinyu	<i>Chromolaena odorata</i>	Asteraceae
5	Palawan	<i>Tristaniopsis sp</i>	Myrtaceae
6	Sapit Udang	<i>Nephelium sp</i>	Sapindaceae

Table 2. Medicinal vegetation on land cover of primary forest

Number	Vegetation	Scientific Names	Family
1	Akar Kuning	<i>Arcangelisia flava</i>	Menispermaceae
2	Alaban	<i>Vitex pubescens</i>	Lamiaceae
3	Balik Angin	<i>Macaranga recurvata</i>	Euphorbiaceae
4	Bati - Bati	<i>Adina minutiflora</i>	Rubiaceae
5	Belaran Tapah	<i>Liana</i>	Arecaceae
6	Belimbing Tunjuk	<i>Averrhoa bilimbi</i>	Oxalidaceae
7	Jengkol	<i>Pithecellobium jiringa</i>	Fabaceae
8	Kamalaka	<i>Phyllanthus emblica</i>	Phyllanthaceae
9	Sapat Wood	<i>Macaranga triloba</i>	Euphorbiaceae
10	Khilayu	<i>Nephelium sp</i>	Sapindaceae
11	Kupang	<i>Albizia sp</i>	Fabaceae
12	Larak Api	<i>Cyathostemma sp</i>	Annonaceae
13	Larak pisang	<i>Cyathostemma viridiflorum</i>	Annonaceae
14	Mampat	<i>Cratoxylon resosum</i>	Hypericeae
15	Mengkudu	<i>Morinda citifolia</i>	Rubiaceae
16	Paikat laki (rotan)	<i>Calamus sp</i>	Arecaceae
17	Pasak Bumi	<i>Eurcycoma longifolia</i>	Simaroubaceae
18	Penawar seribu	<i>Bauhinia purpurea</i>	Fabaceae
19	Pulai	<i>Alstonia scholaris</i>	Apocynaceae
20	Rotan Pilak	<i>Calamus sp</i>	Arecaceae
21	Sapit Udang	<i>Nephelium sp</i>	Sapindaceae
22	Sungkai	<i>Peronema canescens</i>	Verbenaceae
23	Tampar Badak	<i>Alstonia sp</i>	Apocynaceae
24	Tatao	<i>Liana</i>	Arecaceae

Table 3. Medicinal vegetation on the land cover of secondary forest

Number	Vegetations	Scientific Names	Family
1	Alaban	<i>Vitex pubescens</i>	Lamiaceae
2	Banglai warik	<i>Zingiber cassumunar</i>	Zingiberaceae
3	Belaran Tapah	<i>Liana</i>	Arecaceae
4	Buah makassar	<i>Brucea javanica</i>	Simaroubaceae
5	Jengkol	<i>Pithecellobium jiringa</i>	Fabaceae
6	Kamalaka	<i>Phyllanthus emblica</i>	Phyllanthaceae
7	Karamunting	<i>Ochthocharis bornensis</i>	Melastomataceae
8	Karinyu	<i>Chromolaena odorata</i>	Asteraceae
9	Katu gunung	<i>Phyllanthus niruri</i>	Phyllanthaceae
10	Kayu sapat	<i>Macaranga triloba</i>	Euphorbiaceae
11	Khilayu	<i>Nephelium sp</i>	Sapindaceae
12	Mahang	<i>Macaranga hypoleuca</i>	Euphorbiaceae
13	Mampat	<i>Cratoxylon resosum</i>	Hypericeae
14	Pasak Bumi	<i>Eurcycoma longifolia</i>	Simaroubaceae
15	Paikat laki (rotan)	<i>Calamus sp</i>	Arecaceae
16	Sapit Udang	<i>Nephelium sp</i>	Sapindaceae
17	Sungkai	<i>Peronema canescens</i>	Verbenaceae
18	Wangun gunung	<i>Evodia sp</i>	Rutaceae

Table 4. Medicinal vegetation on the land cover of shrubs

Number	Vegetations	Scientific Names	Family
1	Alaban	<i>Vitex pubescens</i>	Lamiaceae
2	Balik Angin	<i>Macaranga recurvata</i>	Euphorbiaceae
3	Banglai warik	<i>Zingiber cassumunar</i>	Zingiberaceae
4	Belaran Tapah	<i>Liana</i>	Arecaceae
5	Buah makassar	<i>Brucea javanica</i>	Simaroubaceae
6	Galinggang	<i>Cassia quaderialata</i>	Fabaceae
7	Kamalaka	<i>Phyllanthus emblica</i>	Phyllanthaceae
8	Karamunting	<i>Ochthocharis bornensis</i>	Melastomataceae
9	Katu gunung	<i>Phyllanthus niruri</i>	Phyllanthaceae
10	Larak pisang	<i>Cyathostemma viridiflorum</i>	Annonaceae
11	Mahoni	<i>Swietenia mahagoni</i>	Meliaceae
12	Paikat laki (rotan)	<i>Calamus sp</i>	Arecaceae
13	Pancing (Bandotan)	<i>Angeratum conyzoides</i>	Asteraceae
14	Sapit Udang	<i>Nephelium sp</i>	Sapindaceae
15	Wangun gunung	<i>Evodia sp</i>	Rutaceae

Table 5. Medicinal vegetation on the land cover of open land

Number	Vegetations	Scientific Names	Family
1	Alaban	<i>Vitex pubescens</i>	Lamiaceae
2	Alang - Alang	<i>Imperata cylindrical</i>	Poaceae
3	Balik Angin	<i>Macaranga recurvata</i>	Euphorbiaceae
4	Kantong Semar	<i>Nepenthes</i>	Nepenthaceae
5	Karamunting	<i>Ochthocharis bornensis</i>	Melastomataceae
6	Teki Grass	<i>Cyperus rotundus</i>	Cyperaceae
7	Sapit Udang	<i>Nephelium sp</i>	Sapindaceae

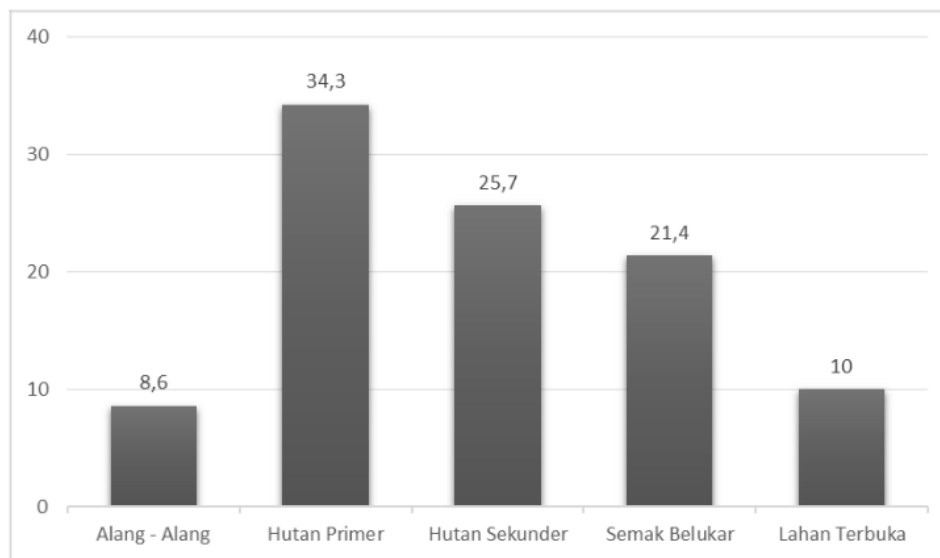


Figure 1. Percentage of medicinal vegetations on each land cover

The percentage of medicinal vegetation on each land cover can be seen in the picture above. The highest percentage of medicinal vegetation is the primary forest land cover, about 34.3%. While the lowest percentage is alang - alang land cover, about 8.6%. This can be occurred due to the differences in the growing place and the soil nutrient on each land cover. The differences where it grows that can cause different types of diversity. Medicinal vegetation mostly found in primary forest, because it has a lot of nutrient and there are many species of vegetation diversity. It is inversely

proportional to the growing place on alang - alang land cover that has less nutrients. So that only certain species are able to grow on those land cover.

The benefits of Drug Vegetation

Akar Kuning (*Arcangelisia flava*)

Akar Kuning (*Arcangelisia flava*) is commonly used by the people as a liver medicine, jaundice, typhus, ulcers and rheumatism. The usable parts of this Akar Kuning (*Arcangelisia flava*) are the stems and roots. The water from stems and roots of Akar kuning can be drunk.

Alaban (*Vitex pubescens*)

Alaban is commonly used by the people as a drug of diabetes, wounds, fever, colds and accelerate blood circulation. The parts that can be used as medicine are flowers, bark and root. Application to the wound, the flowers of alabaan are destroyed and immediately applied to the wound. The boiled leaves'water of alaban also can be consumed as herbal drink, as you can drink it regularly.

Alang - Alang (*Imperata cylindrica*)

Alang - alang can be used as medicine for back pain, fever, kidney stones, nosebleeds, blood urine, vomiting blood and hypertension (high blood). Fransisca (2010) states that alang - alang can also cure toothache. The usable part of alang-alang is the root and rhizomes. For healthiness, ordinary people can drink boiled water of its root.

Balik Angin (*Macaranga recurvata*)

Balik Angin (*Macaranga recurvata*) is an anti-mosquito repellent. We can use the stem bark. It has a very sensitive smell. For the application, people commonly apply the bark directly to the skin.

Bandotan (*Angeratum conyzoides*)

Bandotan is nearly all around us. This vegetation has many benefits to cure back pain, malaria, flu, rheumatism even as an anti-cancer and tumor. The parts that can be used into medicine are the leaves and roots. For its use, commonly used as an internal medicine.

Banglai Warik (*Zingiber cassumunar*)

Banglai warik has benefits to cure allergy, fever, headache, jaundice and intestinal worms. This vegetation has a characteristic flower color that is so interesting. The parts that can be used as medicine are leaves and rhizomes. The leaves and rhizomes can be boiled, then it can be consumed.

Belaran Tapah (Liana)

Tapah is a kind of propagate vegetation. It can be used as a cough medicine. The part that can be used from this Vegetation is the water that was contained in the roots. To get the medicinal benefits, people usually drink the water.

Bati - Bati (*Adina minutiflora*)

Bati - bati can be used as abdominal pain medicine (Kissinger et al, 2013). The part that can be used as a medicine is a leaf. We can use that by drink the boiled water of the leaf.

Belimbing Tunjuk t (*Averrhoa bilimbi*)

Belimbing Tunjuk or star fruit can be used as a cough, diabetes, toothache, acne, panu, hypertension and thrush medicine. Meiske et al (2008) stated that this vegetation can also cure kidney disease. Beside that, this plant can also cure urinary disease (Rosmaniar, 2005). The part that can be used as a medicine is flowers and fruit. Fruit and flowers can be used as internal or external usage.

Makassar Fruits (*Brucea javanica*)

The fruit vegetation of Makassar has special characteristic of this color. This fruit has been widely cultivated and believed as medicinal fruit. It can be used for malaria, lumbago, hemorrhoids, vaginal discharge, cervical cancer. This fruit has a very high antioxidant. The parts that can be used as medicine are leaves, fruits and roots. Usually these parts are used as an internal medicine.

Galinggang (*Cassia quaderialata*)

Galinggang can be used for skin diseases (Meliki et al, 2013). Even, this plant is believed to brighten the skin, the part that can be used is the leaves. This vegetation is commonly used as an external medicine.

Jengkol (*Pithecellobium jiringa*)

Jengkol is commonly consumed as food. Beside that, jengkol also has medicinal properties. Jengkol can be used for diabetes, ulcers, anemia and even as anti cancer. The usable parts of this plant is fruits and roots. It can be used as an internal or external.

Kamalaka (*Phyllanthus emblica*)

Kamalaka can be used as a medicine for abdominal pain, dysentery, rheumatism, hemorrhoids, canker sores and even as an anti-cancer. The part that can be used is leaf, fruit and bark. It can be used as an internal or external.

Kantong Semar (*Nepenthes*)

Kantong Semar is a type of vegetation that has the characteristics of having a bag. Besides the beauty of this form of this plant, it also has medicinal properties. it can be used for back pain, abdominal pain, and also enhancing male's stamina. The parts that roots and rhizomes. It can be used as an internal or external purposes.

Karamunting (*Ochthocharis bornensis*)

Karamunting is a resistant vegetable with less nutrient environment. It can be used for cough, antibiotics, blackened eyebrows, diabetes and wound healers. The parts that can be used as medicine are flowers, leaves, fruits and roots. It can be used as an external medicine or internal medicine.

Karinyu (*Chromolaena odorata*)

Karinyu has many benefits. It can be used for wounds, diabetes, vertigo, ulcers, hypertension, breast cancer and cervical cancer. The part that can be used as a medicine is a leaf. It can be used as an external medicine or internal medicine.

Katu Gunung (*Phyllanthus niruri*)

Katu gunung can be used as fertilizer for women, male stamina enhancer, prevent osteoporosis and even increasing the supply of the breastmilk for women. The part that can be used as a medicine is a leaf. It can be used as an external medicine or internal medicine.

Sapat Wood (*Macaranga triloba*)

Sapat wood can be used as anti-hypertension, diabetes, gout, anti-cancer and herbal contraceptive. The parts that can be used are leaves, bark and roots. It can be used as an external medicine or internal medicine.

Khilayu (*Nephelium sp*)

Khilayu is can be used for herpes' medicine. The part that can used as a medicine is the leaf. It can be used as an external medicine or internal medicine.

Kupang (*Albizia sp*)

Kupang can relieve an abdominal pain. The part that can be used as a medicine is fruit and can be used as an internal medicine.

Larak Api (*Cyathostemma sp*)

Larak api can be used to make our hair is getting more black. The part that can be used as a hair blackener is the fruit.

Larak Pisang (*Cyathostemma viridiflorum*)

The Vegetation of larak pisang also can be used to blacken hair. The part that can be used is the fruit.

Mahang (*Macaranga hypoleuca*)

Mahang is a nutritious vegetation that has medicinal properties as a guam drug and as eye drops. The part that can be used as medicine is the sap from this plant. For the application, just drip to the affected part.

Mahogany (*Swietenia mahagoni*)

Mahogany is a common vegetation. It has benefits to cure, malaria, menstrual pain, fertilizer for women, heart disease, and Alzheimer's treatment. The usable parts of this Vegetation are fruit and bark. Commonly used as an internal medicine.

Mampat (*Cratoxylon resosum*)

Mampat can be used for liver and jaundice. The medicinal part is the root. Commonly used as an internal medicine.

Mengkudu (*Morinda citifolia*)

Mengkudu is a popular plant in the community that has medicinal properties. It can be used for worms, liver, hypertension, fever, stroke, cholesterol, antibiotics, diabetes and even anti-cancer. The part that can be used as a medicine is its fruit. For its use, ordinary people consume this vegetation.

Paikat Laki (*Calamus sp*)

Paikat Laki (*Calamus sp*) is a rattan-type plant. It can be used for back pain, malaria, diarrhea and even as a male stamina enhancer. The parts that can be used as medicine are leaves, stems and roots. For its use, this vegetation is commonly used as an internal medicine.

Palawan (*Tristaniopsis sp*)

This plant has properties as liver medicine, abdominal pain, ulcers and can be used as a stamina enhancer. The parts that are commonly used as medicine are leaves, bark, stems and roots. For its use, this vegetation is commonly used as an internal medicine.

Pasak Bumi (*Eurycyoma longifolia*)

Pasak bumi is a vegetation that has long root characteristics of the shape of the stem. It can be used for back pain, dysentery, fever, pain, abdominal pain, malaria, male stamina enhancers even as anti-cancer. All parts of the earth pegs can be used as medicine. For its use, commonly used as an internal medicine.

Penawar Seribu (*Bauhinia purpurea*)

Penawar Seribu (*Bauhinia purpurea*) can be used for diarrhea, rheumatism, mumps, diabetes, wounds and can as anti-cancer. The parts that can be used as medicine are leaves and stems. Commonly used as an internal or external medicine.

Pulai (*Alstonia scholaris*)

Pulai can be used as medicinal properties as a drug for malaria, as an anti-oxidants, anti aging and cure fever. The parts that can be used as medicine are leaf and bark. For its use, this part of vegetation is commonly used by consuming boiled water the parts that can be utilized.

Pilak Rattan (*Calamus sp*)

Rattan Pilak is one kind of a rattan. It is commonly used for back pain, malaria, diarrhea even as a male stamina enhancer. The parts that can be used as medicine are leaves, stems and roots. For its use, this vegetation is commonly used as an internal medicine.

Teki Grass (*Cyperus rotundus*)

Teki Grass is a vegetation that can be used for vaginal discharge, skin diseases, fever, increasing the supply of the breast milk and fix the menstrual cycle. Nyoman (2013) states that Teki Grass can be used as an urinal drug. The parts that can be used for medicine are leaves and tubers. It is commonly used as an internal medicine.

Sapit Udang (*Nephelium sp*)

Sapit shrimp is a vegetation that can be used as a drug for diarrhea and hypertension. The part that can be used as a medicine is the leaf. It is commonly used as an internal medicine.

Sungkai (*Peronema canescens*)

Sungkai is a vegetation that can be used as a drug for malaria and also increasing fertility for women. The part that can be used as a medicine is a leaf. It is commonly used as an internal medicine.

Tampar Badak (*Alstonia sp*)

Tampar Badak (*Alstonia sp*) is a vegetation can be used as a medicine for deep wounds, vomiting blood and can remove toxins in the body. The part that can be used as a medicine is a stem. It is commonly used as an internal medicine.

Tatao (Liana)

Tatao is a creeping that can be used as a drug for dysentery and hypertension. The part that can be used as medicine is water in the stem. Internal purposes only.

Wangun Gunung (*Evodia sp*)

Wangun Gunung (*Evodia sp*) can be used for allergy, malaria, insect repellent, fever, deodorant. The part that can be used as medicine is the leaf. Internal purposes only.

Based on the results of the identification of medicinal vegetation, there are types –of the species that can be used as a malaria drug. According to research conducted by Ira (2015), vegetations that has anti-malarial properties are Lime Tree (*Harmsioplanax aculeatus*), red fruit (*Pandanus conoideus*), Benalu mangga (*Dendrophthoe pentandra*), Mangosteen (*Garcinia mangostana*), Cempedak (*Artocarpus champedem*), Betel (*Piper betle*), Mundu (*Garcinia dulcis*) and Sunflower (*Helianthus annuus*). While in the area of KHDTK, some vegetations also have similar function. The species are Makassar Fruit (*Brucea javanica*), Mahogany (*Swietenia mahagoni*), Rattan (*Calamus sp*), Bandotan (*Angeratum conyzoides*), Pasak bumi (*Eurycyoma longifolia*), Sungkai (*Peronema canescens*) and Wangun gunung (*Evodia sp*).

According to Meiske, at all (2008), a study was conducted in Minahasa District. The vegetation that can be used as a malaria drug is Cambodia (Plumiera acuminata), Kumis kucing (*Orthosiphon spicatus*) and Tali pahit (*Tinospora tuberculata*). In this area, we also found vegetation that have anti-cancer properties. They are the Makassar fruit, Jengkol, Kamalaka, Karinyu, Sapat Wood, Mengkudu, Bandotan, Pasak bumi,

There is also a vegetation that can be used as a natural dye. The vegetation is Larak pisang (*Cyathostemma viridiflorum*) and Larak api (*Cyathostemma sp*). Fransisca et al (2005) stated that there are other types that can be natural dyes, the type is ehang (*Syzgium inophyllum*). Dyes was derived from leaves, bark, flowers, fruit and roots (Lestari K, 1999). Beside as a healer, medicinal vegetation can also be used as reforestation of tsunami prone areas (Kintoko, 2006). Kardinan (2003) stated that a very good medicinal plant that can be grown in hot and dry areas is Mimba (*Azadirachta indica*)

CONCLUSION

There are 38 species of Vegetation that have medicinal properties in all land cover in KHDTK area of Lambung Mangkurat University. The primary forest land cover has the biggest number of medicinal vegetations. This land cover has 34,3% medicinal vegetation of total of 38 species. Secondary forest cover kept 25.7%, shrub kept 21.4% 10% open land cover and alang-alang 8.6%. The most dominant medicinal vegetation on alang-alang land cover is Karamunting (*Ochthocharis bornensis*), and Alang-Alang (*Imperata cylindrica*). The dominant medicinal vegetation in primary forest land cover is Akar Kuning (*Arcangelisia flava*), Pasak Bumi (*Eurycyoma longifolia*) etc. Dominant medicinal vegetation on secondary forest land cover is Sapat Wood (*Macaranga triloba*), Karinyu (*Chromolaena odorata*), etc. The dominant medicinal vegetation on open land cover is Kantung Semar (*Nepenthes*), Teki Grass (*Cyperus rotundus*), etc. While the dominant medicinal vegetation in land cover of shrubs are Makassar (*Brucea javanica*) and Bandotan (*Angeratum conyzoides*).

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